

## Final Exam Topics by Unit

*The Final Exam is about 40% Units 1 - 3 and about 60% Units 4 - 6.*

### Unit 1 - Functions

- Functions - what makes them and basic analysis
- Even/Odd - ways to prove
- Transformations
- Combinations of functions (composing functions, adding/subtracting/multiplying/dividing)

### Unit 2 - Polynomial and Rational Functions

- Factoring trinomials and special patterns (difference of square/cubes, sum of cubes)
- Defining characteristics of a polynomial or a rational function
- Sketch graphs of polynomial and rational functions and write equations from graphs
- Synthetic and long division for polynomial division
- Simplify rational expressions with addition, subtraction, multiplication or division
- Solve rational equations and completely factor polynomial equations
- Do I remember quadratics?

### Unit 3 - Exponential and Logarithm Functions

- Exponential and logarithm functions, their tables, and their graphs
- Transformations of exponential and logarithm functions (both graphing and writing from graphs)
- Logarithms and their relationship to exponentials - evaluating with and without a calculator if given appropriate information
- Common properties of logarithms (product, quotient, power, change of base) and their use to expand or simplify logarithmic expressions
- Solve exponential and logarithm equations with and without the use of a calculator

### Unit 4 - Unit Circle Trigonometry and Triangles

- Be able to work fluently with radians and/or degrees within problems
- Right triangle trig word problems
- The UNIT CIRCLE (if you don't know this, passing will be difficult)
- Inverse trig functions (these come up in Units 5 and 6 as well)
- Law of Sines and the Ambiguous Case and word problem applications
- Law of Cosines and word problem applications

### Unit 5 - Trig Graphs and Graph Application

- Graphing sine and cosine including period, amplitude, horizontal midway line shifts, reflections
- Writing equations from graph including the above transformations
- Applying graphs to real-world scenarios and solving the classics (tide, ferris wheel, etc)

### Unit 6 - Trigonometric Properties and Equations

- Properties - reciprocal, quotient, pythagorean, even/odd, sum and difference, double angle (note you are not responsible for half angle formulas)
- Equations - solving a variety of levels of equations from basic, to those involving factoring and/or property substitution.

1. Hopefully you have taken steps before each Unit Test to create a **personal study guide** using the provided topic lists from each unit's study guide. If you have not already done so, you should *start now*.
2. **Review** your tests, quizzes, homework, classwork practice, and warm-ups. Practice specifically with the problems you missed! You might want to create a running list of questions as you study and bring that to class each day so you can make the most of the review time.
3. As you are reviewing, look for **connections** across units. I will not be trying to trip you up with any questions on the exam, but I am looking for your ability to connect ideas and problem-solve as these are important skills for someone moving onto Calculus.
4. **Practice problem packets** will be posted to the wikispace with keys. These are meant to provide a resource for you to pick and choose from to get the practice you need on basic skills. If you need more practice in a certain area and you can't find problems, send me an email. Please allow 48 hours turnaround for specific requests.